The Carving Craftsmanship’s Process Principle And Measures Of The Ming And Qing Furniture Artisan

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Abstract: The wood-carving is a Chinese traditional decorative art, which is to carve the three-dimensional configuration designed by artisan on the furniture components. For thousand years, the traditional skill has been inheriting with the way of teacher and pupil generation, and formed a set of systematic operational approach. This paper, based on sorting of the carving technique’s process principle and measures of traditional artisan, would divide carving handcraft into four processes of shencai huagao, yiwen tayang, cupi zaozhi and chanxue suxing. And combined the specific cases, discussed the operative skills of every process, analysed the internal rationality and scientific of process principle and measures of traditional artisan. It will plays a significant role in inheriting the national intangible cultural heritage of Ming style furniture production techniques and Jingzuo style furniture manufacturing technology, and producing the Ming and qing hardwood furniture.

Key words: Ming and qing furniture; Artisan; Carving craftsmanship; Process principle; Procedure measure
INTRODUCTION

Woodcarving is a kind of Chinese characteristics adornment art. And its history is long, It can be traced back to 7000 years ago. As in Hemudu cultural sites had unearthed a woodcarving of fish. The original of the old history already cannot take an examination of this. But from the existing historical and cultural relics know woodcarving art is in the jade, stone, bones, teeth sculpture art such as under the influence of the germination. And its application in the furniture should be at least in the Shang dynasty[1].After thousand years, the intelligent of the artisan search and to Ming and Qing dynasties has formed a fully mature sculpture technology and the necessary tools to use a method. It could be said that, carving techniques is the important component of Ming and Qing dynasty furniture and also is one of the unique technological characteristics. Specific is refers to the use of different type cut, shovel, scraper, line saw tool and to shovel out 3 d form of artwork .This paper is on the basement of the traditional carving process principle and artisan frequently using process measures. And dividing the artwork according to the material extension, coarse grain sample cut billet system, shovel cutting model four working procedure and combined with some examples. This paper discusses the process of every operation skills and analyzes the inner reasonable and scientific way. This to "Ming dynasty furniture manufacture technique", "Jingzuo hardwood furniture manufacture technique" and other countries intangible cultural heritage and to inherit the Ming and Qing dynasties hardwood furniture of significance of reference to the modern production.

SHENCAI HUAGAO

Shencai Huagao refers to the carving timber wood material according to the particular sculpture and space layout. One of the specific conditions of the carving timber wood refers to the wood grain material characteristics and surface characteristics. In particular, the timber wood grain characteristics refers to the wood texture and the surface feature that is refers to the modelling of material characteristics and regularity of distribution on the surface. In practice, the traditional furniture of this two carved artisan constantly understanding and summarized, and gradually formed a set of effective design principles. The three main technical points for muwen shuli, yiwen lixing and yixing suxing.

" Muwen shuli " means to grasp the wood texture and the trend of carving pattern of the position. If the relation between the position is suitable, wood texture will be fluctuation and flow which is changeable. and Such as the round-backed armchair by the dedication of a shallow relief (figure 1) design conception is very clever. first is the whole piece of flower live position clearly by the three groups of wood texture to common curve to the changes in the trends. It made it to be the visual center of the backboard. and the pattern , the size and the direction is not the free one without consideration. For example, the position is back on top of the outermost curve peaks parts of boundaries. and the bottom is back on the outermost curve around the peaks of parts of boundary. Then the head of appearance with internal to the three group is also the curve of the
wood grain, especially leading to the chest and the "S" curve is clearly on the top. The curve of the wood grain curve are linked. there are real meaning of broken is even better. Conversely, if the relationship between the two processes is not good, the flower pattern to live with wood texture of strewn at random to cross will not only affect the appearance of the flow of feeling and their own line of kind of the flower live integral aesthetic feeling. But also affects the flower patterns and the wood itself live connected soundness. It still have this relief. As an example, on the assumption that the position of the dedication of the best in these three groups within the curve of the wood grain to the middle. The size is also not influenced by it. It is obviously will be destroyed by the formation of the stable before the visual centre. And can affect the body's natural indirect dynamic beauty.

"Yiwen lixing " is the further of wood lines presenting ".And the concrete is through the wood natural texture that is kind of the patterns and the carved wood texture to be the perfect fusion. In the growth of wood wheeled way contributed to the log size. This is also a flower patterns and the natural texture of corresponding created prerequisites for. Such as the chair by the dedication of the curving cut decorative pattern design is to "to the texture" type well reflect (figure 2). From its first linear texture feature of its diameter is that by cutting board created. By learning and wood and wood processing theory, It is known that the size of the board wood cutting straight lines, and wood arrange grain growth direction of plank wood fiber connection strength far outweigh the vertical direction of plank wood growth wood fiber connection strength. And the length direction size is curving flowers. The curving flowers pattern width size 2 times much. The internal cloud careless grain branches and leaves out the wood straight grain direction extension and dedication of edge connect. It is not only the obvious straight texture photograph .The more important is the strength consideration of the type of the branches. It is same kind of way as we said.
"Yixing suxing" is the material itself according to the morphological characteristics and material characteristics of the whole to shape carved image. The key technology is mainly to the wood carving and type surface of grasping the characteristics. The experienced carved on the understanding of the basic material form artisan based on the characteristics of it. The main methods used in small root of his works, such as chrysanthemum pear symbolizes root furnishing articles (figure 3). Sculpture artisan cleverly borrow root slipped out of the morphological characteristics. It will cause body below the slender. In the Ming and Qing dynasty, This method is reflected in two aspects. On the one hand, it is the trend of the wood texture to enhance the furniture the structure of the components, And the specific is straight grain out straight materials, song lines out QuCai, such as chrysanthemum pear round-backed armchair (figure 4), such as the leg side wipe linear component is much by texture straight plank made, and five meet chair circle are five sections with chair circle arc corresponding song plate type made; On the other hand, it is reflected in the root of furniture production, such as root square table (figure 5) four legs and tooth board are saving a pick up by roots, it is originality alone rhymes.

Figure 3 chrysanthemum pear symbolizes furnishing articles

Figure 4 chrysanthemum pear round-backed armchair

Figure 5 roots square table

Master the above three methods. Here is curving flowers. According to the samples from it (figure 6). It is known that the light of wood texture, tooth board a three-step distribution, has the obvious bump change, specific for both ends of the texture are up have larger radian is outspread,
and in the middle parts of the texture appears quite gentle, and slightly upward spike. Therefore, in the design volume hook when moire should also be follow the basic rules of the texture, and finally formed the ends for larger volume hook lines radian. And the distribution is more intensive. Also in the middle are smaller and the distribution is more sparse pattern space layout.

**YIWEN TAYANG**

"Yiwen Tayang" refers to the direction of law of the development of wood engraving materials. It will copy transparent soft materials such as in the pattern of artwork. Expand the engraving posted on the surface of the part process. The three main technical points is like this, miaogao huayang, wenli shenshi and gaoyang tatie.

"Miaogao huayang" refers to the pattern with good design make it into the white paper own the transparency and softness. It has two purpose. One of them is to preserve the sample design. The last one is to further master of kind of the design and the rule. The key techniques have three points. One for the size of the special paper. It need to be the same size to the one you need. But when the component has the type in special. It should be based on the size and some more. Because it's easy to operation of the one mistake and stick dissatisfaction component. But need explanation is due to the Ming and Qing dynasty furniture sculpture designs with symmetry characteristics of more. So the paper determine the size of the artisan. It usually in the form of kind of the painting for shaft centreline folded in half and half to pattern (known as mother lines) size shall prevail [2]. This not only reduce trace complex flower pattern live extension of the error, and also ensure the consistency of kind of the flower around live. In addition, it is very important also. Its permeability and softness not beautiful would affect "extension kind" the work efficiency and accuracy of kind of the live copy flower, can also affect parts of carving wood texture analysis of the direction that it cannot be sure go in the direction of the sword. And may even make joint in sculpture on the surface of the part which can lead to carved flower patterns and the design of living at first flower pattern deviation between it; The second is some of kind of the painting. It embodied in a long components for the flowers of the extension kind live. Because components flower pattern live far outweigh the general specification for the length of the paper. This needs to be clearly label out two pattern of some specific position. Three for grain appearance depth level and the expression of the relationship with. Its main is to point in the topology sample, the patterns and the pattern of the relationship between with express clear. Especially in have multilayer engraving content, use different degree to express the different layer.

"Wenli shenshi" refers to the sample should look carefully from the law before post carved wood panel. And with the flower with good appearance of extension live corresponding to each other. In order to ensure the consistency of the two, "gaoyang tatie" refers to the "wenli shenshi". And on the basis of extension good sample will be accurately paste desire to graven component surface. The key technology has two, one for the halfway point of the corresponding position.
The main means to ensure the extension of kind of the draft of the centre position and sculpture component to the unity of the centre. The key point also have two. one for paste concentration control. It must not be too loose that will affect the bonding strength. And too thick will not only influence the level of extension draft paste, but also affects the wood texture identification. Secondly paste the master way. To follow by the centre is to both ends of the principle. And the concrete is in alignment flowers line and sculpture live in the centre position after component that with one hand holding flowers live the centre line of the fixed position pattern. And from the centre of the component position began to brush paste. It will take place from the centre line and began to finish with the end of the paste component gradually wood texture flattening the direction, and to ensure that the flowers with live sample component surface no bubble between phenomenon, complete, and then use the same method in the component surface flat spend half live extension pattern. But in a long paste, It is part of sample component. In the following this principle, under the premise of should also ensure that pattern to docking accurate, and it will be joining together of excess pattern. In addition, the curving flowers line kind of the double or the round when need to establish standards, to ensure that the two sides pattern can paste together.

For the former two carved the centre line of the component is still in for reference standards and only to determine a carving of the centre line. The latter is adjacent to the one round reference standards. It can be better to identify each pattern on adjacent live docking and accuracy of the same level.

Finally, for example the carving machinery in cloud shape board. We have a key presentation like this (figure 6). You will know it as you see the samples. It is known that the component to the carved of curving flowers. The curving flowers for practice. and belongs to the most simple a layer of grain appearance layout, but in different parts have a different size. Have a basic understanding of it. And it can be carried on in grain extension samples. First, to roll off the centerline of the extension draft grain position and light meat tooth board of the centre position corresponding, determined, with the right hand hold down the volume hook grain the centre line of the extension draft position. Then the draft with the left hand extension left part of this. And from the centre line position began to besmear brushes component to paste, side brush, part of the trend towards from the centre line began. The extension will gradually left along the wood grain direction develop draft show flat. Finally by the same method will be part of the pattern right extension draft paste in component surface.
**CUPI ZAOZHI**

"Cupi Zaozhi" refers to the flower carving component of the sample paste live pattern characteristics by using chiseled grinding machining method. The file to its grain appearance profile and the hierarchical relationships for preliminary machining process. The three main technical points, respectively, for pattern analysis, lunkuo dingxing and lidao kaixian.

"Pattern analysis" refers to the carved flowers to live of kind of the structure, characteristics and laws to outline comb. Especially in the area of multi-level carved flower living pattern. This process is very important. "Lunkuo dingxing ", It is mainly refers to the curve of the component type sculpture outside outline or curving flowers. The curving pattern to live before chiselled. Thus, it can not only help to take live of kind of the further chiseled, but also can greatly improve the work efficiency. The key techniques have four point. One for drilling wear bow. First use it in close to take live outline of edge (about 2 ~ 3 mm) of hollow out regional drilled through a round hole. Need explanation is again to complex drilling curving flowers. The curving flowers pattern, It make sure to do precisely clear row holes, lest appear processing error. Secondly, The technical difficulties is mainly to the "search direction" master, shipped to "stable" saw, the strength should be skillful, and should make the movement direction and sculpture hacksaw components of vertical plane. Modern processing is used instead of the electric drill and drill, saw the Sougongzi with alternative, enhanced the production efficiency. Three for "flash volumes even". It is mainly refers to with different types of wood trim amid the "bow type search" residual saw mark flash. In order to make flower live from each of kind of the handover and place such as the corner has fruity effect. The depth of the grinding file must be based on the characteristics and the degree of kind of the round and decide, filing too thin or too thick are not suitable for the further after carving. "Lidao kaixian" refers to the length of the appearance of the matters and spend live to choice and the corresponding flat or round cut cut, press from top to bottom, its principle, along the flower pattern on the movements of the line to live on its outline "zaoxian" processing, should be accomplished with trenchant primary and secondary, different depth.

[3]The technical difficulties are mainly embodied in the chisel type of choice and control of the way the cut. Especially when the interface measures carving, accurately grasp the incision size.
options radian. In general, the arc of the knife to smooth in the radian measures. For the latter is mainly refers to the strength of the control and cut the shipment of cut cut pressure control. In the specific chiseled, no matter cut or cut all round flat blade surface should make the cut in to chiseled outline of the lateral pattern, and in the cut, we should pay attention to gouge in the overlap .In order to avoid the knife scar fracture and chiseled depth caused by uneven line kind of the outline of inconsistent phenomenon, chiseled strength also want to have a difference, should be based on hierarchical structure pattern decision from inner to outer in order of sequence is abate, and pay special attention to the form and form of taking over parts of the chiseled, to try to minimize carved dynamics, do "let" to the processing of the details as far as possible in the process of carved in the shovel to solve. In addition, but also learn how borrows the hard, do one take.

Finally, we have the example of the carving. The processing technology of the "cupi zaozhi" key points discussed. The former analysis, we can conclude that the tooth board has irregular shape layout, and the volume hook flower carving grain live for practice curving. Therefore, in chiseled coarse grain appearance before the billet, should to roll off the appearance of grain to finalize the design contour machining (figure 7). After completion, it need to comb different size (grain direction and turn off with order. Due to the volume hook pattern levels for curving flowers. The curving flowers of a structure, therefore, in its thick slab of stage just clear cut size different roll off the outline of grain characteristics and relationship with can, and size roll off the hook grain head depth levels vary, compared with both, big volume hook lines of head than small volumes to tick off the hook head deep grain some (figure 8).

**Figure 7** The sketch map of Contour finalize  
**Figure 8** The sketch map of Cupi Zaozhi

**CHANXUE SUXING**
" Chanxue Suxing" is refers to the use of different flat shovel types, round shovel, Ames hook etc
sculpture tool sets of live thick billet for advertisers, further clear spend live texture context, accurate shape flower live of kind of the outline and their levels of structure change. And make flower pattern to live round vivid. The four main technical points is, wenyang buhua, shunwen chanxue, tezheng bawo and guamo paoguang.

"Wenyang buhua" refers to the flower pattern with live ACTS the role of the depth of the fine process, continue to use the brush in the sculpture members to take live carved perfect modelling of kind of the form. Its main features in the round, curving flowers and high relief shovel cutting model.

"Shunwen chanxue" means carved wood grain growth direction along the component to use the knife. So not only makes the shovel out of the plane cutting flat, smooth and still can minimize the shovel cutting process of the resistance of the wood fiber blade. The principle of the sword is fast, accurate and malicious.In specific shovel cut, it still should focus on the whole, always pay attention to grasp the depth of kind of the flower live level change, carved on step by step, and to pay attention to some of the shovel between mark. It should be a spade a spade spade cut to pressure. In addition, it still should pay attention to grasp the shovel cut flowers live in the process of grain appearance. Different shovel cutting direction caused by the differences of wood texture to. In order to better achieve the purpose of the type to texture. Luck of the shovel skills and the method of the same basic cut, here no longer etc.

"Tezheng bawo" means in specific shovel cut model process to the different characteristics of the flower pattern live precisely control. Because different flowers all have different kind live preferences, this also is all the carved flower pattern can contain live whether the key verve. As in furniture of Ming and Qing dynasty is all kinds of flowers in the living pattern. It is mainly in face and facial features of characterization. Women are more oval face, two eyes and mouth carved out more equilateral triangle. Men are different, the different age has different kinds of carved method. The old people's eyes to wrinkle, eyebrows to highlight, the middle-aged and young people don't. Be like again carved dragon pattern is also very fastidious, one must pay attention to the head carving. Head is mainly forehead parts and eyes, carved verve majesty, central body to stout, dragon Angle to the uniform, neck and a horse, neck feathers to carved elegant feeling, the wind tail, regional different technique is differ carved, and so on. [4]

"Guamo paoguang" refers to the use of scraper, stone, grass and other tools to burnish amid all the carved flower of kind of the live on form "the grinding, till the surface to smooth mellow. But need explanation is for carved by cork, construction, furniture of components, especially character of the facial features generally do not polishing processing. Because burnish is easy to make its lost the feeling of lifelike. One of the "the grinding" is a word from the duty to understand, "fix" refers to the use of different shapes of scraper piece of sculpture of flowers
pattern and live parts to the son overhauled find type, the sword direction should go with wood texture of the direction. "Ground" is refers to the use of different specifications of stone and file to find good grass type of flower pattern and live to son surface grinding polish and grind the direction along the wood texture should also. Otherwise, it will destroy the surface of the wood texture [5]. In addition, the use of traditional grinding tools also different, of which the stone and has a thick stone and stone cent, dry grinding with thick stone, the joint with stone, mainly for furniture plane type component burnish, rub is mainly used for carving grass component and irregular component type of joint, the modern grinding tool is changed to different types of coarse sand paper and fine sand paper burnish. Both of the grinding effects and differences. The latter is much less than the more soft and smooth than the former.

Finally, we have the example of the carving. The processing technology "chanxue suxing" discussed the key points (figure 9). The analysis of former can be straight, tooth board on the hook for single cloud carved party structure, and for a sculpture, the tooth board don't need to draw up the ancient time. In the process of cutting the shovel model, the author only need to clear tooth board wood grain direction, and the wood grain direction shovel cut, under the premise of further clear size party into relationship between moire hook and relationship of scale. Using different types of scraper piece of scraping the light off the root of the remainder of the cloud party carved traces and grain appearance outside of the surface to the son. Finally the grass with amid the wood texture to, under the premise of combining party the morphological characteristics of cloud hook tooth board for joint polishing.

![Figure 9](image_url)  The sketch map of Chanxue Suxing

**EPILOGUE**

Wood carving is a Chinese decorative art. It consist of primitive simplicity and elegant design,
elegant beautiful forms (such as the line carve, curving flowers, the curving flowers in the round, engraving and fill in the moment, ash, etc). Both at home and abroad win the very high reputation. One thousand years, intelligent of the artisan in practice and summarizes the inquiry, to Ming and Qing dynasties has formed a fully mature sculpture technology and the necessary tools to use a method. And the way to teacher and pupil it circulates. It could be said that the carving techniques Ming and Qing dynasty furniture manufacturing technology is the important component of Ming and Qing dynasty furniture also is one of the special craft characteristics. This paper, based on sorting of the carving technique’s process principle and measures of traditional artisan, would divide carving handcraft into four processes of shencai huagao, yiwen tayang, cupi zaozhi and chanxue suxing. And combined the specific cases, discussed the operative skills of every process, analysed the internal rationality and scientific of process principle and measures of traditional artisan. It will plays a significant role in inheriting the national intangible cultural heritage of Ming style furniture production techniques and Jingzuo style furniture manufacturing technology, and producing the Ming and qing hardwood furniture.

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